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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
SELLERS, ROBERT E	
ART UNIT	**PAPER NUMBER**
1712	

DATE MAILED: 09/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/627,764	BORTOLOTTI ET AL.	
	Examiner	Art Unit	
	Robert Sellers	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16,18,19 and 22-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16,18,19 and 22-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/28/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16, 18, 19 and 22-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

1. There is no clear line of demarcation between the diolefin elastomer, and the natural rubber, polybutadiene and monovinylarene-conjugated diene copolymer of elastomer 2) in independent claims 23 and 24. The diolefin elastomer encompasses the other species and there is no guidance on page 3, lines 1-5 of the specification as to what elastomers other than the other species is embraced thereby.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16, 18, 19 and 22-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent No. 654,364; Hsieh et al. Patent No. 4,341,672 and Terakawa et al. Patent No. 5,569,690.

2. The European patent (translation, page 4, lines 19-24) discloses a sulfur-curable (page 10, Table 1) tire tread prepared from 100 parts by weight of a rubber such as natural rubber, polybutadiene or a styrene-butadiene copolymer (page 5, last line to page 6, line 3), from 3 to 80 parts by weight of an epoxidized diene having at least 20% of oxirane groups (page 5, lines 22-25) such as epoxidized styrene-butadiene rubber (page 10, Table 1, E-SBR) or epoxidized natural rubber (Table 1, ENR 50, containing 25 mole% of epoxidation according to CAPLUS accession no. 2000:503042), from 3 to100 parts of silica (the Ultrasil VN3 shown in Table 1 is silica as corroborated by Chemical abstracts registry no. 7631-86-9, page 1, line 3 and page 4, line 33) without a silane, and from 3 to 100 parts by weight of carbon black.

3. The claimed epoxidation degree of between 2.27 and 5% (supported by the specification on page 20, Table 3, Copolymer A5 and page 17, Table 1, Copolymer A2, respectively) is based on the number of moles of epoxidated double bonds as compared to the initial number of moles of diene double bonds (page 3, lines 13-15).

It is unclear whether the minimum of 20% of oxirane groups described in the European patent converts to an epoxidation level within the claimed limits. The epoxidation content of the European patent is not confined to the value of 20% since such an amount is characterized as "especially advantageous (page 5, lines 24-25)."
The general teachings of the reference embraces lower less advantageous ranges.

4. Hsieh et al. reports a sulfur-curable tire tread (col. 5, lines 4-28) obtained from 100 parts by weight of an epoxidized diene rubber (col. 1, lines 49-55) wherein as little as 5% of the olefinically unsaturated sites have been converted to oxirane groups (col. 4, lines 18-23), from 40 to 100 parts by weight of carbon black and silica (col. 4, line 42).

5. Terakawa et al. (cols. 7-8, Tables 2 and 3) shows a sulfur-curable tire tread (col. 1, lines 9-11) derived from either 100 parts of an epoxidized diene rubber having preferably from about 0.1 to 60 epoxy groups per 100 monomer units (col. 3, lines 9-18) alone or together with a diene rubber along with 50 parts by weight of carbon black.

6. It would have been obvious to epoxidate the diene rubber of the European patent to as low as 5% as reported in Hsieh et al. or within the parameters of Terakawa et al. in order to improve the wet skid resistance (Hsieh et al., col. 1, lines 49-51) without an excessively high glass transition temperature leading to adverse workability and compatibility with other rubbers (Terakawa et al., col. 3, lines 13-18).

7. It would have been obvious to employ the silica of the European patent at the disclosed concentration of from 3 to 100 parts by weight together with the carbon black of Hsieh et al. and Terakawa et al. in order to lower the rolling resistance and improve the wet traction and abrasion resistance (European patent, page 4, last two lines to page 5, line 2).

8. The declaration filed February 20, 2004 has been considered but is unpersuasive. The declaration on page 5, section IV states that "[t]he data of Tables 1 and 2 should be divided and interpreted as two groups, the first group being copolymers A1-A4 and the second group being copolymers A5-A7. This is because the copolymers of the two groups differ in vinyl content, which is 47.2-50.5% for copolymers A1-A4 and 63.5-65.0% for copolymers A5-A7. The vinyl content of the copolymers influences the properties of the copolymers, in particular Tg (glass transition temperature) and, consequently, dynamic behavior and resistance to abrasion."

9. Compound M1-A2 of Table 2 contains a styrene-butadiene copolymer A1 with an epoxidation degree of 5%. However, its vinyl content according to Table 1 (page 4) is in the first group of low vinyl content with a value of 50.2%. The closest prior art examples are embodied in Compounds M1-A4 with an epoxidation degree of 11%, and M1-A6 possessing a value of 14%. The claimed minimum epoxidation degree of 2.27% is exhibited as Compound M1-A6. However, these compounds are grouped in the second group of higher vinyl content.

It cannot be ascertained whether the alleged unexpected results in the ratio of Tan δ 1 Hz 0.1% strain, 0°C: Tan δ 1 Hz 0.1% strain, 60°C, low hardness and abrasion loss is singly attributable to the claimed epoxidation degree or whether the difference in vinyl content is a contributing factor as admitted to on page 5 of the declaration.

10. There is no comparision between examples represented the claimed epoxidation limits of 2.27% and 5% and the closest prior art values of 11% and 14% wherein the vinyl content is held constant to isolate the effect of the epoxidation degree on the tested properties.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Sellers whose telephone number is (571) 272-1093. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

Robert Sellers
Primary Examiner
Art Unit 1712

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9/22/2005